



Medical-Biological
Research & Technologies

MR-12 Rocker-Shaker



**Operating Manual
Certificate**

for version
V.2AW

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1. Safety Precautions

The following symbol means:



Caution! Make sure you have fully read and understood the present Manual before using the equipment. Please pay special attention to sections marked by this symbol.

GENERAL SAFETY

- ♦ Use only as specified in the operating manual provided.
- ♦ The unit should be saved from shocks and falling.
- ♦ The unit must be stored and transported only in a horizontal position (see marking on the package).
- ♦ After transportation or storage keep the unit under room temperature for 2–3 hrs before connecting it to the electric circuit.
- ♦ Use only cleaning and decontamination methods recommended by the manufacturer.
- ♦ Do not make modifications in design of the unit.

ELECTRICAL SAFETY

- ♦ Connect only to a electric circuit with voltage corresponding to that on the serial number label.
- ♦ Do not plug the unit into an ungrounded power socket, and do not use an ungrounded extension lead.
- ♦ Use only the external power supply unit provided with this product.
- ♦ Ensure that the external power supply connector is easily accessible during use.
- ♦ Disconnect the unit from electric circuit before moving. Disconnect the external power supply unit from power socket to turn off the unit.
- ♦ If liquid penetrates into the unit, disconnect it from the external power supply unit and have it checked by a repair and maintenance technician.

DURING OPERATION

- ♦ Do not impede the platform motion.
- ♦ No objects or body parts can be placed between the platform and shaker body at any time.
- ♦ Do not operate the unit in environments with aggressive or explosive chemical mixtures.
- ♦ Do not operate the unit if it is faulty or has been installed incorrectly.
- ♦ Do not use outside laboratory rooms.
- ♦ Do not place a load exceeding the maximum load value mentioned in the Specifications section of this Manual.

BIOLOGICAL SAFETY

- ♦ It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or penetrates into the equipment.

2. General Information

MR-12 Rocker-Shaker provides adjustable soft (intensive) growth media or solutions mixing in vessels or single use plastic bags placed on the platform.

Adjusting speed and angle of the platform shaking user can optimize a mixing process according to a task settled.

The device can be used for washing gels after electrophoresis, it is ideal for biomolecule hybridization on strips and for staining and washing of strips and slides.

When installed into a bioincubator, the shaker is ideal for incubating cells and cell cultures in single use plastic bags with working volumes of up to 5 liters.

Rocker-Shaker is equipped with a system of platform overload automatic detection. In the case of overload an error message is shown on the unit's display, accompanied by the sound signal. This option ensures long-term safe operation.

3. Getting started

3.1. Unpacking.

Remove packing materials carefully and retain them for future shipment or storage of the unit.

Examine the unit carefully for any damage incurred during transit. The warranty does not cover in-transit damage.

3.2. Complete set. Package contents:

MR-12 Rocker-Shaker	1 piece
detachable platform	1 piece
rubber mat.....	1 piece
four screws and a wrench	1 set
external power supply unit	1 piece
power cord	1 piece
Operating Manual; Certificate	1 copy

3.3. Set up:

- place the unit upon firm stable even horizontal surface;
- remove protective film from the display;
- connect the power cord to the external power supply unit;
- plug the external power supply unit into the 12 V socket at the rear side of the unit.

3.4. Platform installation

- install the platform on the unit and remove the rubber pad.
- secure the platform on the supporting platform on top of the unit with the four supplied screws.
- cover the platform with the rubber mat.

4. Operation

- 4.1. Connect the external power supply plug to a grounded electric circuit.
- 4.2. The display will turn on with the upper line showing time, RPM and tilt angle set earlier (Set, fig.1/1) and the lower line (Actual fig.1/2) showing current readings of the parameters (0:00 – time, mode indication (STOP/RUN)).

Setting the parameters

Use the readings in the upper line of the display, while setting the necessary parameters.

4.3. *Setting time (Time hr:min)*

Using the ▲ and ▼ **TIME** keys (Fig. 1/3) set the required working time interval in hours and minutes (increment 1 min). Pressing the key for more than 3 sec will increase the increment.

Note! If the operation time is not set and the timer indicator shows 0:00, pressing the **RUN** key (Fig. 1/6) will start continuous operation of the unit until the **STOP** key (Fig. 1/7) is pressed.

4.4. *Setting speed (Speed RPM)*

Using the ▲ and ▼ **SPEED** keys (Fig. 1/4) set the required shaking intensity in oscillations per minute (increment 1 oscill/min). Pressing the key for more than 3 sec will increase the increment.

4.5. *Setting tilt angle (Angle Deg.)*

Using the ▲ and ▼ **ANGLE** keys (Fig. 1/5) set the necessary angle

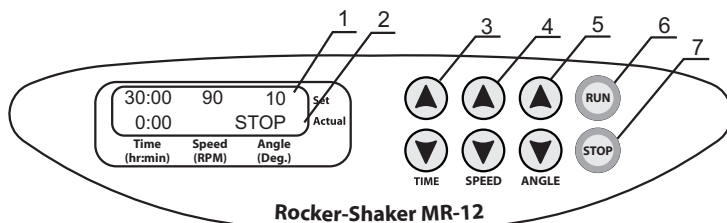


Fig.1. Front panel

(increment 1°). Pressing the key for more than 3 sec will increase the increment.

The set parameters can also be changed during operation.

Program execution

- 4.6. Place samples on the platform, arranging the load symmetrically relative to the tilt axis.



Caution! Do not place any objects between the platform and the shaker body.

- 4.7. Press the **RUN** key (Fig. 1/6). The platform will start shaking and the timer indicator will start counting up the time interval (with 1 min precision).
- 4.8. If the platform is overloaded, the device will make three attempts to restart the operation (indication: DRIVER ERROR). If the attempts fail, a flashing OVERLOAD reading will be shown on the display, accompanied by the repetitive sound signal, until the **STOP** key (Fig. 1/7) is pressed. Eliminate the causes of overload before restarting operation (see p. 4.6).
- 4.9. After the set time elapses, the platform motion will stop and the flashing STOP reading will be shown on the display, accompanied by the repetitive sound signal, until the **STOP** key is pressed.
- 4.10. If necessary the unit can be stopped at any time during operation before the set time has elapsed by pressing the **STOP** key. In this case the platform motion will stop when the platform achieves horizontal position. Pressing the **RUN** key again will start the program from the beginning (timer will be restarted).
- 4.11. After finishing the operation disconnect the external power supply unit from electric circuit.

5. Specifications

The unit is designed for operation in cold rooms, incubators and closed laboratory rooms at ambient temperature from +4°C to +40°C and maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.

5.1. Mixing frequency control range 1 – 99 oscill/min

5.2. Mixing frequency setting resolution 1 oscill/min

5.3. Tilt angle range

for 1 – 50 oscill/min range 0 – 10°

for 51 – 99 oscill/min range 10°

5.4. Digital time setting 1 min – 99 hrs 59 min / non-stop

5.5. Time setting resolution 1 min

5.6. Maximum continuous operation time 168 hrs

5.7. Maximum load 5 kg

5.8. Platform working area 480x380 mm

5.9. Dimensions 430x480x210 mm

5.10. Input current/power consumption 12 V, 1.1 A / 13 W

5.11. External power supply input AC 100-240 V 50/60 Hz, output DC 12 V

5.12. Weight* 11.9 kg

* Accurate within $\pm 10\%$.

Replacement parts	Description	Catalogue number
PP-480	Detachable platform with non-slip rubber mat	BS-010130-AK

Biosan is committed to a continuous programme of improvement and reserves the right to alter design and specifications of the equipment without additional notice.

6. Maintenance

- 6.1. If the unit requires maintenance, disconnect the unit from electric circuit and contact Biosan or your local Biosan representative.
- 6.2. All maintenance and repair operations must be performed only by qualified and specially trained personnel.
- 6.3. Standard ethanol (75%) or other cleaning agents recommended for cleaning of laboratory equipment can be used for cleaning and decontamination of the unit.

7. Warranty and Claims

- 7.1. The Manufacturer guarantees the compliance of the unit with the requirements of Specifications, provided the Customer follows the operation, storage and transportation instructions.
- 7.2. The warranted service life of the unit from the date of its delivery to the Customer is 24 months. Contact to your local distributor to check availability of extended warranty.
- 7.3. If any manufacturing defects are discovered by the Customer, an unsatisfactory equipment claim shall be compiled, certified and sent to the local distributor address. Please visit www.biosan.lv, Technical support section to obtain the claim form.
- 7.4. The following information will be required in the event that warranty or post-warranty service comes necessary. Complete the table below and retain for your records.

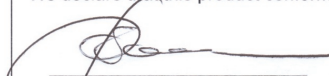
Model	MR-12 Shaker-Rocker
Serial number	
Date of sale	

8. Declaration of Conformity

Declaration of Conformity

Equipment name:	MR-12
Type of equipment:	Rocker-Shaker
Directive:	EMC Directive 2004/108/EC Low Voltage Directive 2006/95/EC RoHS 2011/65/EC WEEE 2002/96/EC & 2012/19/EU
Manufacturer:	SIA BIOSAN Ratsupites 7, build.2, Riga, LV-1067, Latvia
Applied Standards:	<u>EN 61326-1:</u> Electrical equipment for measurement, Control and laboratory use - EMC requirements General requirements <u>EN 61010-1:</u> Safety requirements for electrical equipment for measurement, control and laboratory use. General requirements <u>EN 61010-2-051:</u> Particular requirements for laboratory equipment for mixing and stirring

We declare that this product conforms to the requirements of the above Directive(s)



Signature
Svetlana Bankovska
Managing director



Signature
Aleksandr Shevchik
Engineer of R&D

12.06.2013

Date

12.06.2013

Date

How to choose a proper Shaker, Rocker, Vortex

biosan

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PSU-20i

ES-20/60
(with heating)



- Applications:
- Microbiology
 - Extraction
 - Cell growing

PSU-10i



ES-20
(with heating)

MR-12



Volume of liquids

$10^3 \dots 10^2$ ml

Erlenmeyer flasks, Cultivation flasks
and 50 ml tubes



Multi RS-60

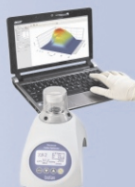


Multi Bio RS-24

- Applications:
- Microbiology
 - Extraction
 - Cell growing



RTS-1



V-1

- Applications:
- DNA-analysis
 - Genome sequence



MR-1

- Applications:
- Agglutination
 - Extraction
 - Gel staining/
destaining



Multi Bio 3D

- Applications:
- Agglutination
 - Extraction
 - Blot hybridisation
 - Gel staining/destaining



10^1 ml

Petri dishes, vacutainers
and tubes up to 15 ml



PST-60HL
PST-100HL
(with heating)

PST-60HL-4
(with heating)



PSU-2T

- Applications:
- ELISA analysis
 - Hybridization

MPS-3500



TS-100 (with heating)
TS-100C (with heating
and cooling)



V-32



$10^0 \dots 10^{-3}$ ml

PCR plates, microtest plates
and Eppendorf type tubes

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